

(1) If  $f(x) = x^2 + x$ , compute and simplify  $\frac{f(1+h) - f(1)}{h}$ .

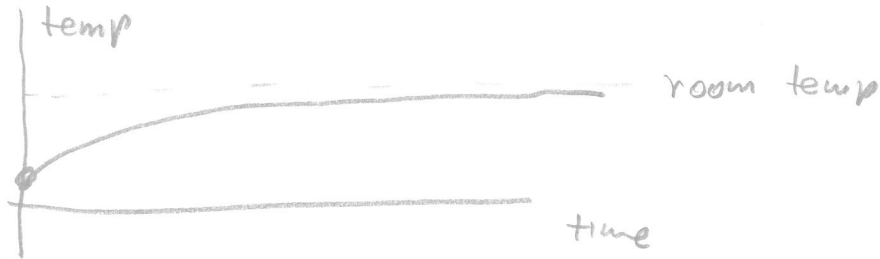
2 pts

$$\frac{f(1+h) - f(1)}{h} = \underline{3+h}$$

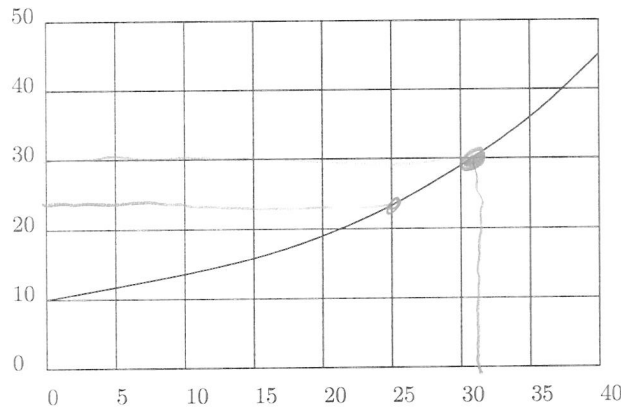
$$\begin{aligned} \frac{f(1+h) - f(1)}{h} &= \frac{(1+h)^2 + (1+h) - (1^2 + 1)}{h} \\ &= \frac{1 + 2h + h^2 + 1 + h - 2}{h} \\ &= \frac{3h + h^2}{h} \\ &= \frac{h(3+h)}{h} = 3+h \end{aligned}$$

(2) A cold rock is brought into a warm room. Graph the temperature, in °F, as a function of the time, in minutes, the rock has been in the room.

1 pt



(3) If  $y = f(x)$  has the following graph:



1 pt

(a) Estimate  $f(25)$ .

$$f(25) \approx \underline{23} \quad (22 \text{ or } 24 \text{ ok})$$

1 pt

(b) What, approximately, is the solution to  $f(x) = 30$ .

$$x \approx \underline{31} \quad (30.5 \text{ or } 32 \text{ ok})$$